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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/572,673

03/20/2006

Hidenori Hara

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EXAMINER

DIAO, M BAYE

ART UNIT

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2838

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/572,673	Applicant(s) HARA ET AL.	
	Examiner M'BAYE DIAO	Art Unit 2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03/20/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>SPecification filed on 01/18/2008</u> . |

DETAILED ACTION

Amendment

1. Acknowledgement is made of Amendment filed on 01/18/2008.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. **Claims 1- 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawa et al., (Sawa) US PAT 6,351,397 in view of Sakai et al., (Sakai) US PAT 6,556,464.**

5. As per claim 1, Sawa et al. disclose (abstract; col. 2, lines 35+;col. 5, lines 29+;cols. 6 -7; col.8, lines 1-60) and show in Figs. 1 - 6:

a PWM cycloconverter including an AC power source (1) in which phases (r,s,t) are connected directly (via switches (3) to (20)) to phases (u,v,w) of the output side thereof by means of a bi-directional switch (see col. 2, lines 44-55) having self-arc-extinguishing capability (see col. 5, lines 33-47), wherein an AC power source (1) voltage is PWM-controlled in response to an output voltage (voltage at terminal (45), see Fig. 2) command to output variable voltage having variable frequency, the PWM cycloconverter comprising:

an input current detecting means ((31) to (36)) for detecting one or more input current of the PWM cycloconverter; and

Sawa differs from the claimed invention because he does not specifically disclose a PWM converter connected to a DC voltage means, wherein an output unit of the PWM converter is connected to a place before an input filter of the PWM cycloconverter to keep down resonance of the input filter on the basis of an input current signal detected by means of the input current detecting means.

Sakai et al. (hereinafter "Sakai") discloses (abstract; col. 5, lines 59+; col.6, lines 1-54) and shows in Figs 1, and 7:

a three-phase PWM converter system (see Fig. 7) comprising a PWM converter (3b) connected to a DC voltage means (Vdc)(4).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Sawa by including in the cycloconverter system the PWM converter connected to a DC voltage means, wherein

an output unit of the PWM converter is connected to a place before an input filter of the PWM cycloconverter to keep down resonance of the input filter on the basis of an input current signal detected by means of the input current detecting means, for advantages of controlling the PWM converter so that the sine wave power supply has a power factor correction of 1, as per the teachings of Sakai(abstract)

Accordingly, claim 1 would have been obvious.

As per claim 2, Sawa et al. when combined with Sakai disclose the limitation of claim 1 as discussed above. Sawa further discloses (see Fig. 5) the PWM further comprising:

one or more voltage clamping device (113) provided with a diode rectifier (111) connected to an input terminal of a semiconductor device for electric power of the PWM cycloconverter and with a smoothing capacitor (116); and
a voltage detecting device (117)for detecting voltage at the both ends of the smoothing capacitor (116), wherein the capacitor (116) for clamping voltage is used for the DC voltage means (rectification bridges (111),(112)).

Accordingly, claim 2 would have been obvious.

As per claim 3, Sawa et al. when combined with Sakai discloses the PWM cycloconverter according to Claim 1, further comprising:
a snubber (110) formed from a diode (diode in (113))connected to an input terminal (gate)of a semiconductor device (118)for electric power of the PWM cycloconverter and from a capacitor (116); and

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a snubber voltage detecting device (117) for detecting voltage at the both ends of the smoothing capacitor (116) connected to the snubber (113,114), wherein the capacitor (116) for the snubber (110) is used for the DC voltage means.

Accordingly, claim 3 would have been obvious.

Response to Arguments

6. Applicant's arguments filed on 01/18/2008 have been fully considered but they are moot in view of the new grounds of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M'BAYE DIAO whose telephone number is (571)272-6127. The examiner can normally be reached on 8:30-5:00; First Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Akm Ullah can be reached on Monday through Friday at 571-272-2361. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Adolf Berhane/
Adolf Berhane
Primary Examiner
Art Unit 2838

/M. D./